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Two new Chromodorididae (Mollusca, Nudibranchia) from Angola

Dos nuevos Chromodorididae (Mollusca, Nudibranchia) de Angola

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Summary

Two new species of Chromodorididae from Angola are described. They have a traslucent gray body and a yellow border: *Glossodoris ocellata* with carmine-red oval spots circled with white, purple rhinophores in the tip and white gills, *Chromodoris corimbae*, with polyedric purple patches in the body and rhinophores and gills tinged with purple in the distal part.

Resumen

Se describen dos nuevas especies de Chromodorididae de Angola, de color de fondo gris translúcido y borde del manto amarillo: *Glossodoris ocellata* con manchas ovales carmín, rinóforos púrpura en el ápice y branquia blanca, y *Chromodoris corimbae*, con manchas poliédricas azules y con la región distal de rinóforos y branquias de color púrpura.

Palabras clave: *Glossodoris*, *Chromodoris*, especies nuevas, Angola

Key words: *Glossodoris*, *Chromodoris*, new species, Angola

INTRODUCTION

Previous references to West African chromodorididae are few, and the most noteworthy contributions are those of Edmunds (1981) for Ghana, Ortea (1988) for Cape Verde and Ortea, Valdés y Garcia (1997) for atlantic blue Chromodorididae with enclosed the Angola species. Also, the Opisthobranch fauna of Angola has remained to date virtually unknown.

This paper deals with two undescribed species of Chromodorididae collected along the Angolan coastline

MATERIAL AND METHODS

Most specimens referred to in this study have been either hand collected at low water of spring tides or in shallow water (1-5 m); a few more have been obtained through dredging from a small boat down to 60 m depth.

Colour drawings of the animals were prepared from living animals, using a binocular microscope, and drawings given a serial number repeated on the labels of specimens. Colour slides were also taken of the larger specimens. These documents have been the source of data for the illustrations given in this paper.

All the material considered in this paper is housed in Laboratoire de Malacologie, Museum National d'Histoire Naturelle, Paris.

SPECIES DESCRIPTIONS

Family CHROMODORIDIDAE Bergh, 1891
Genus *Glossodoris* Ehrenberg, 1831

Glossodoris ocellata new species
(Fig. 1 y 2, Lam. I, A y B)

Type material:
Materialexamined: Corimba (province of Luanda), rocky shore facing hotel Costa do Sol: two specimens in November 1981 (drawings LU38, LU39). Bay of Canoco (province of Benguela), one large specimen (slide and drawing BE 15), august 1982. Bay of Santa Maria (province of Benguela), one immature specimen (drawing BE 15), august 1982. Sao Nicolau (province of Namibe), one specimen with egg mass, February 1983. Ponta de Noronha (near shipyard), Mocamedes (province of Namibe), one specimen, February 1983. Bonfin, sud of Angola, five specimens (15-40 mm), july 1990 (E. Rolan leg.).

External morphology: Animal reaching 6 cm when fully extended. Mantle shield (notum) elongate, with strongly undulating margins on large specimens. Foot tapering posteriorly, projecting beyond the mantle when crawling.

Colour translucent gray, with a dorsal pattern of carmine red oval spots circled with opaque white. These are of various sizes, evenly distributed except at the periphery where they are absent. There are 14 larger spots and about as many small ones on a small specimen (BE 15) 14 mm long; up to ca. 50 larger spots and many minor ones on a very large specimen from Ponta de Noronha. The mantle is circled with a yellow margin, merging to an interrupted opaque white on the inner side in larger individuals. The foot is of the same translucent gray, with few carmine spots on the side, more carmine spots circled with white and an opaque white border on the tail.

Rhinophores retractile, the club with 10-15 imbricated lamellae meeting anteriorly on a ridge with a distinct offset, and sloping to meet posteriorly. The lowermost lamellae are incomplete posteriorly, and the stalk is smooth.

Branchial apparatus retractile, with 10-15 slender plumes, of which the foremost are more developed. The plumes are unipinnate in juvenile specimens, irregularly branching in adults. Lamellae are perpendicular to the thick cylindrical axis, and are more separated on the thinner posterior plumes. The rhinophores and gills are of the same general hue as the mantle. The tip of the rhinophores is tinged with purple. There are small opaque white inclusions in the axis of branchial plumes.

Anatomy: The central tooth is a cuspless triangular plate. The five innermost teeth have a central cusp with many minute denticles on each side. Also, the innermost one has two additional inner cusps. The other lateral teeth have a large cusp with about 10 small denticles. The outermost lateral teeth have not denticles. The jaws are formed by bicuspid elements.

The reproductive system has a large gametolytic gland, which connect with the seminal receptacle at the point where arrange the vagina and the duct to the female gland. The prostatic portion of the deferent duct is long and folded, it connects with the vas deferens by a long duct. The ampulla is long.

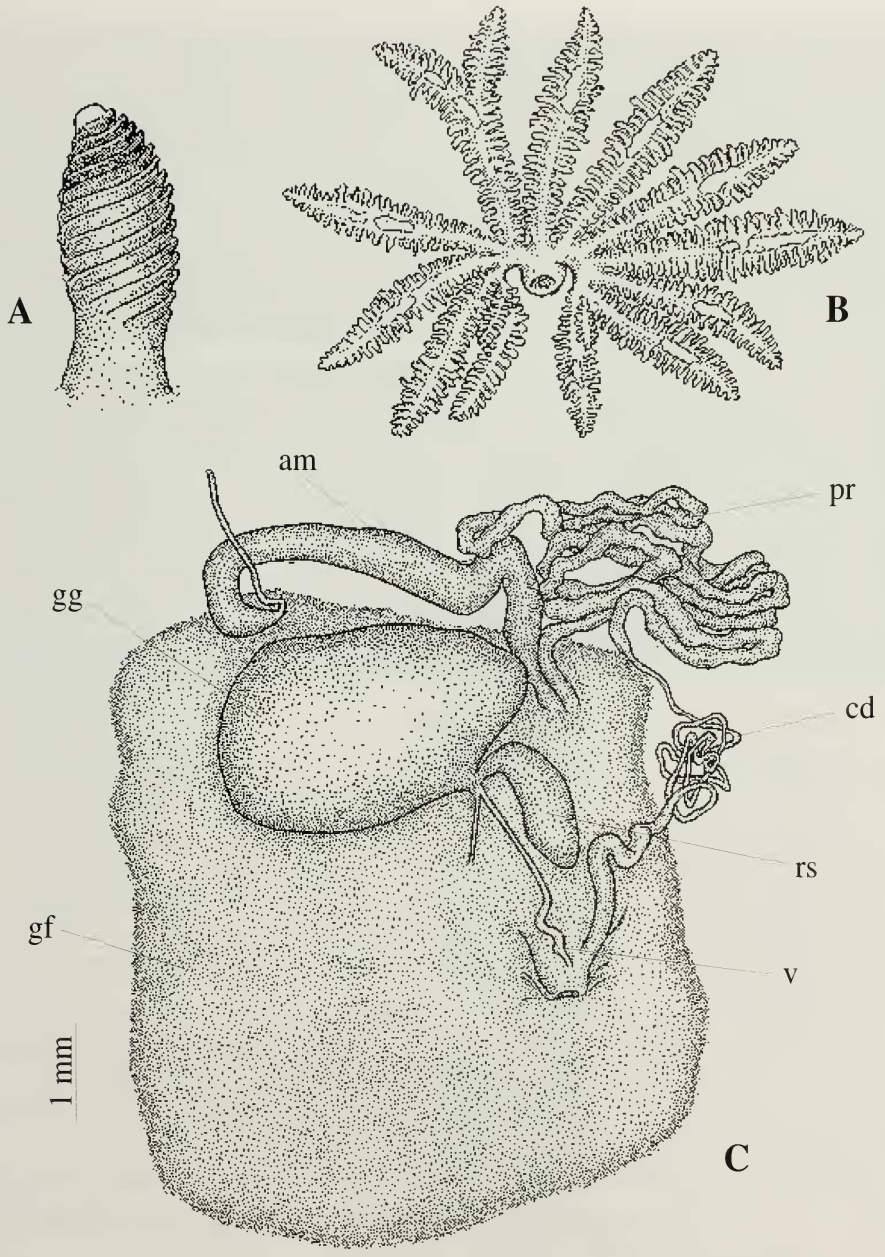


Figure 1. *Glossodoris ocellata* n. sp., A, rhinophore; B, branchial apparatus; C, reproductive system: am, ampula; cd, deferent duct; gf, female gland; gg, gametolyte gland; pr, prostate; rs, seminal receptacle; v, vagine

Figura 1. Glossodoris ocellata sp. n., *A, rinoforo; B, branchia; C, aparato genital: am, ampolla; cd, conducto deferente; gf, glándula femenina; gg, glándula gametolítica; pr, próstata; rs, receptáculo seminal; v, vagina.*

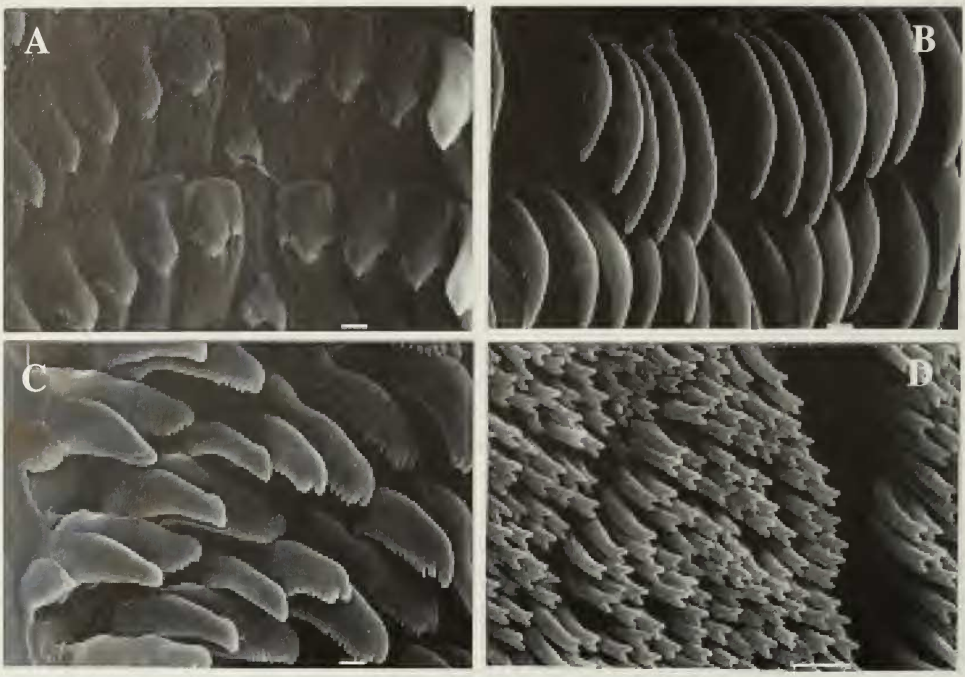


Figure 2. *Glossodoris ocellata,* jaw and radular teeth (scale bar = 10 μm): A, central tooth and inner lateral teeth; B, mid-lateral teeth; C, outer lateral teeth; D, jaw rodlets.
Figura 2. Glossodoris ocellata, *dientes radulares y armadura (escala = 10 μm): A, diente central y primeros laterales; B, dientes laterales medios; C, dientes marginales; D, armadura labial.*

Remarks: General appearance of juvenile specimens is much like *C. corimbae* (described pp. 122-124), but mature individuals grow larger, and then acquire distinctive branching plumes and broadly undulating margins. Large specimens have glandular opaque white lining next to the yellow mantle edge, but those are an irregular fling and not discrete branching corpuscles as in *C. corimbae.*

According with the diagnosis of RUDMAN (1984), *G. ocellata*, must be included in the genus *Glossodoris* Ehrenberg, 1831, by the undulating border of the mantle, the closely packed mantle glands and the radular morphology (presence of central tooth, innermost lateral tooth with many small denticles on each side of the cusp, and the midlaterals with an elongates cusp and the denticles reduced).

Species with a colour pattern similar to that of *G. ocellata* and *C. corimba*e, *C. elegantul*a (Philippi, 1844) and *C. kpone* Edmunds, 1981 have been included by RUDMAN (1983) in the *Chromodoris splendida* colour group

Other species of the genus *Glossodoris* known from West Africa are *G. ghanensis* (Edmunds, 1981) from Ghana and *Glossodoris edmundsi* Cervera, Garcia-G6mez & Ortea, 1989 from Ghana, Canary Islands and Azores. Both species are background colored of greyish-blue, with numerous black, yellow and orange spots (EDMUNDS, 1981; CERVERA ET AL., 1989), different from our specimens of *G. ocellat*a, translucent grey with carmine red spots.

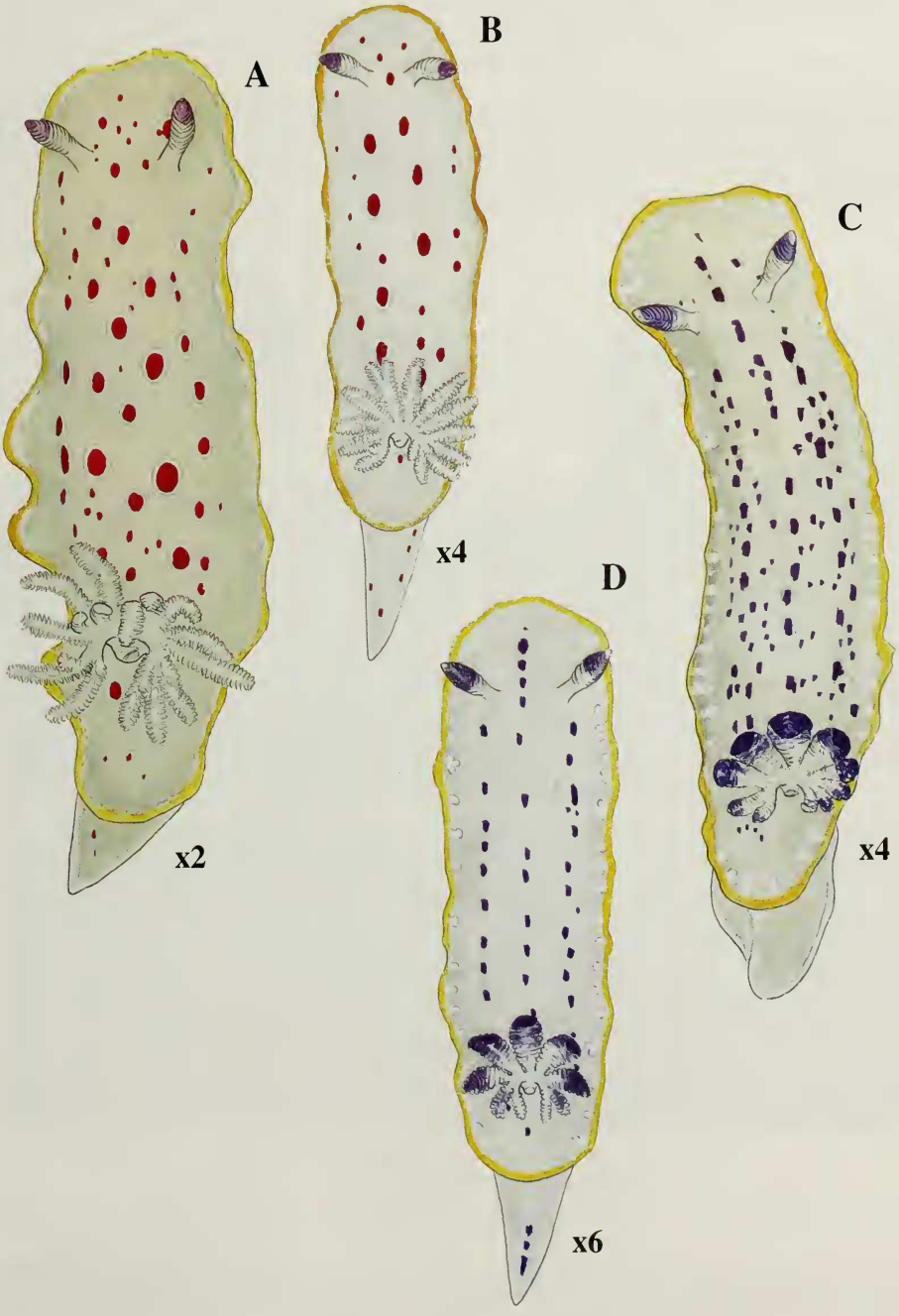


Lámina I: A-B, *Glossodoris ocellata new species*; C-D, *Chromodoris corimbae new species.*

Genus *Chromodoris* Alder y Hancock, 1855

Chromodoris corimbae new species

(Fig. 3 y 4. Lam. I, C y D

Type material: Material examined: Corimba (province of Luanda), rocky shore facing hotel Costa do Sol: several specimens in November 1981 (drawings LU36, LU37) and September 1983 (LU100). Praia Amelia (province of Namibe), two specimens in September 1984 (drawing M066 and photograph), one specimen in july 1990 (E. Rolan leg).

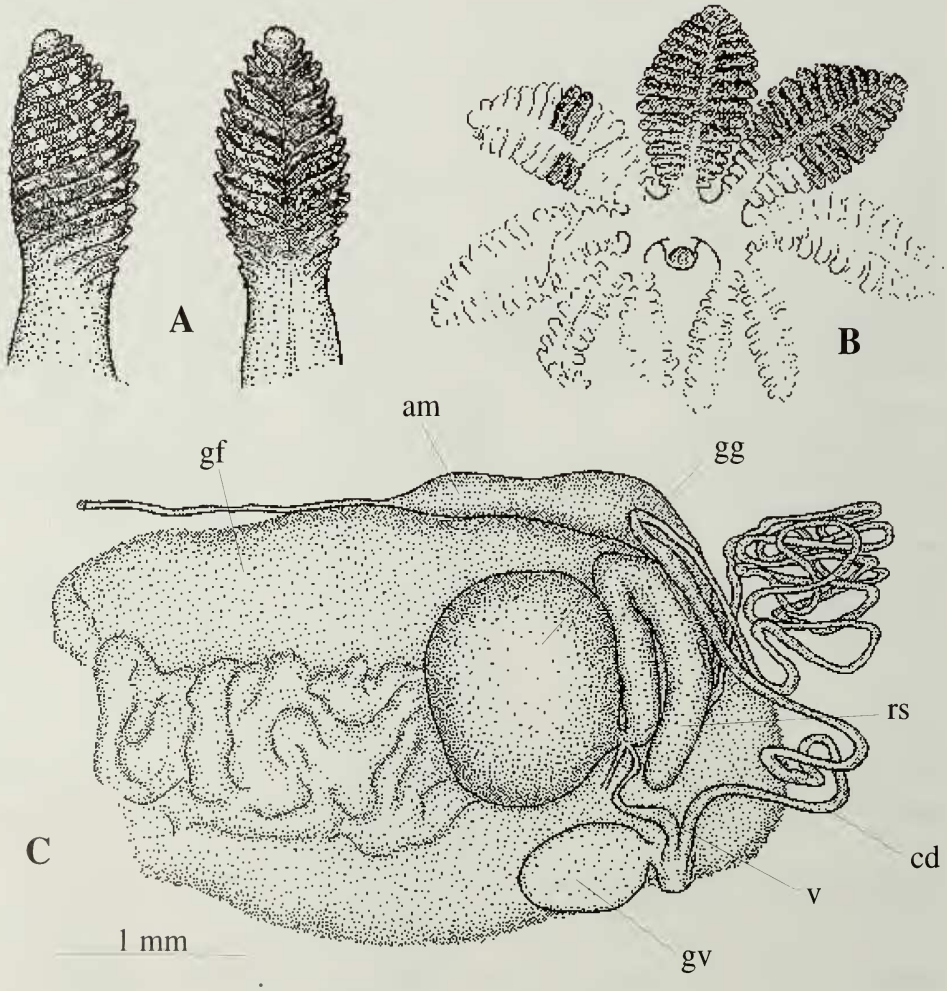


Figure 3. *Chromodoris corimbae* new. sp., A, rhinophores; B, branchial apparatus; C, reproductive system: am, ampula; cd, deferent duct; gf, female gland; gg, gametolyte gland; pr, prostate; rs, seminal receptacle; v, vagine

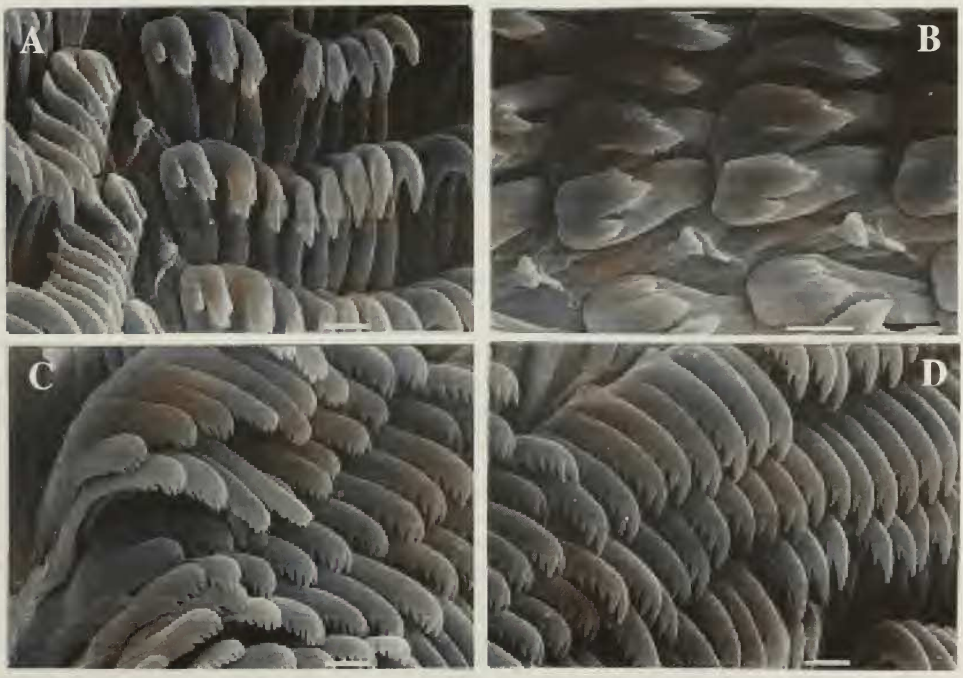
Figura 3. Chromodoris corimbae esp. nov., *A, rinoforos; B, branchia; C, aparato genital: am, ampolla; cd, conducto deferente; gf, glándula femenina; gg, glándula gametolítica; pr, próstata; rs, receptáculo seminal; v, vagina.*

External morphology: Animal 2-3 cm when fully extended. Mantle shield (notum) elongate, parallel sided, rounded in front and behind, with slightly undulating margins. Foot tapering posteriorly, projecting beyond the mantle when crawling.

Colour translucent gray, with a dorsal pattern of small purple spots. These are distributed along three lines, the axial one starting in front of rhinophores and the lateral ones at some distance behind them; all three reaching a short distance behind gills. This pattern is complemented by smaller scattered spots in some (especially larger) individuals. The mantle is circled by a yellow margin, from which are stemming small opaque white glandular granules. The foot is of the same translucent gray, with posteriorly an opaque white margin and occasionally a few axial purple spots.

Rhinophores retractile, the club with 12-15 imbricated lamellae meeting anteriorly and posteriorly with a definite offset. The lowermost lamellae are incomplete posteriorly and stalk is smooth. Branchial apparatus retractile, with 9-12 lanceolate plumes of which the foremost 3-5 are most developed. The plumes are unipinnate, with lamellae projecting perpendicularly to the axis.

Distal two-thirds of rhinophores (except tip which is white) and distal part of major bran-



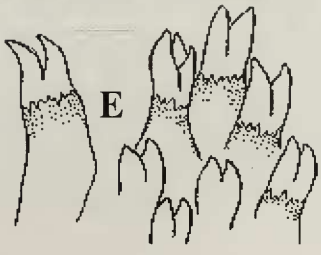


Figure 4. *Chromodoris corimbae* n. sp., jaw and radular teeth (scale bar = 10 µm): A-B, central tooth and inner lateral teeth; C, outer lateral teeth; D, mid-lateral teeth; E, jaw rodlets.

Figura 4. Chromodoris corimbae esp. nov., *dientes radulares y armadura (escala = 10 µm): A-B, diente central y primeros laterales; C, dientes laterales externos; D, dientes laterales medios; E, uncinos de la armadura labial.*

chial plumes tinged with purple; there are small bright white superficial flecks over the rhinophores and gills.

Anatomy: The central tooth is a minute cuspless triangular plate. The 3 innermost lateral teeth has a central cusp with about 3 denticles on each side; the innermost one also has an additional inner cusp. Other lateral teeth have a single cusp with about 5-6 denticles of the same lenght.

The reproductive system has a very long and thin prostatic portion. It connects directly with a long vas deferens.The seminal receptacle is long and folded, it connects with the gametolytic gland at the point where arrange the vagina and the duct to the female gland. There is a rounded vestibular gland.

Remarks: The dorsal colour pattern of *C. corimbae* n. sp. is very similar to that described by EDMUNDS (1981) for *C. kpone* Edmunds, 1981. Nevertheless, background colour in *C. kpone* is cream and the irregular patches are orange-brown, whereas in *C. corimbae* background colour is translucent grey and patches are purple. Internally, the radula of both species is very different. In *C. corimbae* it has central tooth and lateral teeth equal as those described by RUDMAN (1994) for the genus *Chromodoris* Alder & Hancock, 1985, instead the radular morphology of *C. kpone* is identical to that of the genera *Noumea* Risbec, 1828. In this sense *C. kpone* should be included in this later genus.

Other species with a similar pattern to *C. corimbae* is *Chromodoris elegantula* (Philippi, 1844), from the Mediterranean, which present a dorsal white background scattered with many large red spots (some times with the center white) and a yellow line around it (SORDI, 1970). External differences between *C. elegantula* and *C. corimbae* are the background white colour, the large size of the irregular red spots and the uniformly white rhinophores and gills in *C. elegantula* which contrast with the background translucent grey, small purple spots forming three lines, and purple rhinophores and gills of *C. corimbae*.

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